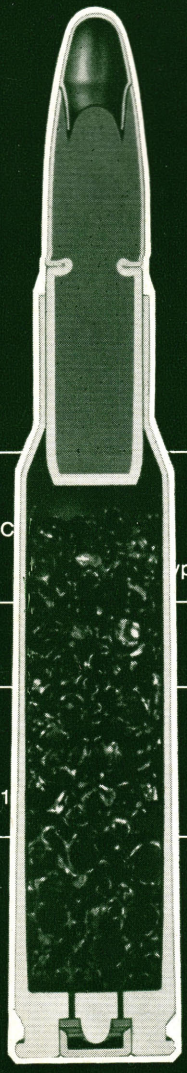
BALLISTIC DATA



Symbol	C	Bullet		Max. permiss-ible breech pressure lbs./ sq.in.	Barrel-length	Velocity ft./sec.			
		ype	Weight grs.		inch.	Muzzle	100 yds.	200 yds.	300 yds.

				Time of flight sec.			Mid-Range Trajectory with telescopic sights 2″ above line of bore		
Muzzle	1		300 yds.	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.

RWS-Centre Fire Cartridges

RWS-Rim Fire Cartridges R-Brand

GECO-Revolver- and Pistol Cartridges

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What can the Ballistic Tables for RWS Rifle Cartridges tell the Hunter?

The shooter or hunter who looks at a ballistic table for the first time, sees at first glance nothing more than long rows of figures which might discourage him from examining the matter more closely. The truth is that these tables could tell him a great deal about the characteristics of the various cartridges, and a proper evaluation of these data might save him many a disappointment in the field or on the target range. The following explanations must be taken into consideration for the proper use of the ballistic tables.

First, it must be stated that the figures given in the tables for RWS Rifle Cartridges must not be considered as absolute values, but as average values, based on results recorded when using various weapons with equal barrel lengths and practically identical muzzle velocities. They are only valid for these muzzle velocities, which can be influenced slightly by the inevitable dimensional tolerances occuring in the manufacture of arms and cartridges, and considerably by differences in barrel length, amount of wear and other factors. The data are, therefore, approximate. They are intended as a help when zeroing a rifle. How a cartridge of certain specifications shoots in a particular weapon, can be decided only by testing the weapon.

The tables have the following columns from left to right: cartridge, type of bullet, weight of bullet, maximum permissible pressure and barrel length of the rifle used for tests, velocity in ft./sec. and energy in ft./lbs. for various ranges. This table shows clearly how velocity and energy decrease with increasing distance. The next column shows how much time (in seconds) it takes the bullet to cover the given ranges (100, 200, 300 yards).

When sighting-in a rifle with a particular cartridge, the following columns are especially important to the shooter. The figures of the mid-range trajectory for 100, 200 and 300 yards are set out in this table. Perhaps the term mid-range trajectory calls for some explanation. After firing, the bullet follows a parabolic curve to the target. This curve is called the path of the bullet. The path of the bullet rises above the line of sight and reaches its highest point about half way along the distance to the target and cuts the line of sight again when entering the target. This highest point in the path of the bullet over the line of sight is called the mid-range trajectory. Therefore, when a rifle is fired the height of the bullet when equidistant from the rifle and the target corresponds to the mid-range trajectory. As most shooters nowadays use telescopic-sights we have made the assumption when compiling our table that the telescopic-sight is mounted about 2 in. above the line of bore.

The practical consequence of the natural dispersion produced by the weapon and the ammunition and the unavoidable human error is that the rifle should be test-fired at a distance where dispersion and human error have the smallest effect, regardless of the desired range for the point of impact. This is in most cases a distance of 100 yards. If the desired point blank range is not identical with this distance, the rifle is zeroed as explained above. Owing to the inherent

dispersion of a barrel, the point of impact cannot be determined with a single shot: at least three to five shots are necessary.

Abbreviations

H. P.	=	Hollow Point
F. M. C.	=	Full Metal Case
P. S. P.	=	Pointed Soft Point
F. P.	=	Flat Point
KS	=	Kegelspitze (Cone Tip)
S. P.	=	Soft Point
HMoH	=	H-Mantle Hollow Point
HMP	=	H-Mantle Plastic Point
HMK	=	H-Mantle Copper Hollow Point
HMB	=	H-Mantle Lead Point

Symbol	Cartridge	Bullet		Max. permiss-ible breech pressure lbs./ sq.in.	Barrel-length	Velocity ft. per sec.			
		Type	Weight grs.		inches	Muzzle	100 yds.	200 yds.	300 yds.
201 R	**.22 Hornet***	P.S.P.	46	42 690	23,5	2430	1750	1380	1100
215 R	**.22 Hornet***	F.M.C.	46	42 690	23,5	2430	1750	1380	1100
1 R	**5,6x35 R**	F.P.	39	34 150	23,5	1940	1290	1010	—
105 R	**5,6x35 R†**	F.P. F.M.C.	39	34 150	23,5	2630	1650	1150	—
220	**.222 Rem.**	P.S.P.	50	45 540	23,5	3180	2625	2150	—
219	**.222 Rem.**	F.M.C.	50	45 540	23,5	3180	2705	2280	—
147 R	**5,6x52 R**	F.M.C.	72	21 270	23,5	2890	2430	2050	1730
276	**5,6x57**	KS	74	54 070	23,5	3410	3050	2705	2380
295	**5,6x57**	F.M.C.	74	54 070	23,5	3410	3050	2705	2380
276 R	**5,6x57 R**	KS	74	54 070	23,5	3410	3050	2705	2380
295 R	**5,6x57 R**	F.M.C.	74	54 070	23,5	3410	3050	2705	2380
8	**6,5x54 M.Sch.**	S.P.	159	45 540	17,5	2180	1930	1710	1500
217	**6,5x57**	HMoH	159	48 380	23,5	2675	2345	2050	1805
217 R	**6,5x57 R**	HMoH	154	41 270	23,5	2625	2295	2020	1790
113 R	**6,5x57 R**	S.P. F.M.C.	93	41 270	23,5	3265	2885	2545	2265
112	**6,5x57**	S.P. F.M.C.	93	48 380	23,5	3315	2920	2590	2310
277	**6,5x57°**	KS	93	48 380	23,5	3315	2905	2545	2200
278 R	**6,5x57 R°**	KS	93	41 270	23,5	3265	2855	2495	2165
218	**6,5x68**	HMP	131	54 070	25,5	3230	2820	2460	2145
218 R	**6,5x68 R**	HMP	131	48 380	25,5	3230	2820	2460	2145
279	**6,5x68°**	KS	93	54 070	25,5	3805	3395	2985	2625
279 R	**6,5x68 R°**	KS	93	48 380	25,5	3705	3280	2905	2560
136	**6,5x68**	P.S.P.	93	54 070	25,5	3805	3330	2905	2575
136 R	**6,5x68 R**	P.S.P.	93	48 380	25,5	3705	3230	2840	2510
273	**6,5x68**	F.M.C.	93	54 070	25,5	3805	3330	2905	2575
273 R	**6,5x68 R**	F.M.C.	93	48 380	25,5	3705	3230	2840	2510
272	**.270 Winch.**	HMK	154	51 230	25,5	2840	2590	2360	2165

* ATTENTION: Only for barrels with a bore diameter of 5.50 mm (appr. .217 in.) and a groove diameter of 5.64 mm (appr. .222 in.). This cartridge cannot be recommended for use in subcaliber barrels.
† This load is destined for weapons with strong actions only. The cartridges can be identified by the red lacquer seal of the primer.
° Projected

Energy ft. lbs.				Time of flight sec.			Mid-Range Trajectory with telescopic sights 2″ above line of bore		
Muzzle	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.
605	315	195	125	0,14	0,34	0,58	— 0,6	+ 4,6	—
605	315	195	125	0,14	0,34	0,58	— 0,6	+ 4,6	—
325	145	90	—	0,19	0,47	—	+ 0,7	+ 9,6	—
600	235	115	—	0,15	0,37	—	+ 0,1	+ 5,5	—
1125	765	515	—	0,10	0,23	—	— 0,5	+ 1,9	—
1125	815	575	—	0,10	0,22	—	— 0,4	+ 1,3	—
1335	945	670	480	0,11	0,25	0,41	— 0,4	+ 2,0	+ 7,4
1910	1530	1205	930	0,09	0,20	0,31	— 0,4	+ 0,8	+ 3,4
1910	1530	1205	930	0,09	0,20	0,31	— 0,4	+ 0,8	+ 3,4
1910	1530	1205	930	0,09	0,20	0,31	— 0,4	+ 0,8	+ 3,4
1910	1530	1205	930	0,09	0,20	0,31	— 0,4	+ 0,8	+ 3,4
1675	1315	1030	795	0,15	0,31	0,50	+ 0,1	+ 3,7	+11,2
2525	1940	1485	1150	0,12	0,25	0,40	— 0,5	+ 2,1	+ 6,7
2355	1800	1395	1095	0,12	0,25	0,41	— 0,5	+ 2,1	+ 6,7
2200	1720	1335	1060	0,10	0,21	0,33	— 0,6	+ 1,1	+ 4,3
2270	1760	1385	1100	0,10	0,21	0,33	— 0,6	+ 1,1	+ 4,3
2270	1745	1335	1000	0,11	0,21	0,33	— 0,4	+ 1,3	+ 4,3
2200	1685	1285	970	0,10	0,21	0,34	— 0,4	+ 1,3	+ 4,3
3030	2310	1760	1340	0,10	0,22	0,35	— 0,6	+ 0,9	+ 3,9
3030	2310	1760	1330	0,10	0,22	0,35	— 0,6	+ 0,9	+ 3,9
2990	2380	1840	1425	0,08	0,18	0,28	— 0,7	+ 0,5	+ 2,7
2835	2225	1745	1355	0,08	0,18	0,29	— 0,7	+ 0,5	+ 2,7
4215	3225	2455	1930	0,08	0,18	0,29	— 0,7	+ 0,5	+ 2,7
2835	2155	1665	1300	0,09	0,19	0,30	— 0,7	+ 0,5	+ 2,7
2990	2290	1745	1370	0,08	0,18	0,29	— 0,7	+ 0,5	+ 2,7
2835	2155	1665	1300	0,09	0,19	0,31	— 0,7	+ 0,5	+ 2,7
2760	2295	1905	1605	0,11	0,23	0,37	— 0,6	+ 1,4	+ 5,8

Symbol	Cartridge	Bullet		Max. permissible breech pressure lbs./ sq.in.	Barrel-length	Velocity ft. per sec.			
		Type	Weight grs.		inches	Muzzle	100 yds.	200 yds.	300 yds.
291	**.270 Winch.**	F.M.C.	130	51 230	25,5	3135	2885	2640	2395
271	**.270 Winch.**	HMK	130	51 230	25,5	3135	2855	2575	2315
114	**7x57**	HMK	173	48 380	23,5	2525	2350	2205	2075
115 R	**7x57 R**	HMK	173	42 690	23,5	2460	2230	2035	1855
114	**7x57**	HMB	173	48 380	23,5	2525	2275	2065	1875
115 R	**7x57 R**	HMB	173	42 690	23,5	2460	2215	2000	1805
20/ 20 R	**7x57 7x57 R**	S.P.	173	48 380 42 690	23,5	2345	2065	1835	1640
280	**7x57°**	KS	116	42 690	23,5	3000	2610	2245	1905
23/ 23 R	**7x57 7x57 R**	F.M.C.	139	48 380 42 690	23,5	2560	2265	1970	1705
23/ 23 R	**7x57 7x57 R**	S.P.	139	48 380 42 690	23,5	2525	2180	1885	1625
281 R	**7x57 R°**	KS	116	42 690	23,5	2855	2460	2115	1790
116	**7x64**	HMK	173	51 230	25,5	2790	2590	2420	2250
117 R	**7x65 R**	HMK	173	46 960	23,5	2725	2475	2265	2065
25	**7x64**	S.P.	173	51 230	25,5	2620	2300	2040	1800
25 R	**7x65 R**	S.P.	173	46 960	23,5	2525	2230	1970	1740
25	**7x64**	F.M.C.	173	51 230	25,5	2620	2300	2040	1800
25 R	**7x65 R**	F.M.C.	173	46 960	23,5	2525	2230	1970	1740
282	**7x64°**	KS	116	51 230	25,5	3280	2855	2460	2065
283 R	**7x65 R°**	KS	116	46 960	23,5	3180	2770	2380	2000
284	**.308 Winch.**	HMK	180	51 230	23,5	2560	2330	2115	1920
285	**.308 Winch.**	S.P.	150	51 230	23,5	2855	2545	2245	1985
286	**.308 Winch.**	P.S.P.	180	51 230	23,5	2560	2295	2050	1835
221	**.30-06 (7,62x63)**	HMK	180	48 380	23,5	2755	2510	2280	2065
222	**.30-06 (7,62x63)**	P.S.P.	150	48 380	23,5	2985	2655	2345	2065
223	**.30-06 (7,72x63)**	P.S.P.	180	48 380	23,5	2705	2410	2165	1935

° Projected

Energy ft. lbs.				Time of flight sec.			Mid-Range Trajectory with telescopic sights 2″ above line of bore		
Muzzle	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.
2840	2405	2010	1655	0,10	0,21	0,32	— 0,5	+ 1,1	+ 4,1
2840	2355	1915	1545	0,10	0,21	0,33	— 0,5	+ 1,2	+ 4,2
2450	2120	1865	1655	0,12	0,26	0,40	— 0,3	+ 2,1	+ 6,6
2325	1910	1590	1320	0,13	0,27	0,43	0	+ 2,7	+ 8,3
2450	1990	1640	1350	0,13	0,26	0,42	— 0,2	+ 2,3	+ 7,6
2325	1885	1535	1250	0,13	0,27	0,43	0	+ 2,9	+ 9,3
2110	1640	1290	1035	0,14	0,29	0,46	— 0,2	+ 3,0	+ 9,4
2320	1755	1300	935	0,11	0,22	0,37	— 0,3	+ 1,7	+ 5,6
2020	1585	1195	845	0,13	0,26	0,43	— 0,1	+ 2,6	+ 8,2
1970	1465	1095	815	0,13	0,27	0,44	— 0,1	+ 2,7	+ 8,3
2100	1560	1155	825	0,11	0,24	0,39	— 0,2	+ 2,0	+ 6,5
2990	2575	2250	1945	0,11	0,23	0,36	— 0,5	+ 1,6	+ 5,4
2855	2355	1970	1640	0,12	0,24	0,37	— 0,3	+ 1,7	+ 5,9
2635	2030	1600	1245	0,12	0,26	0,41	— 0,3	+ 2,2	+ 7,8
2450	1910	1490	1165	0,12	0,26	0,42	— 0,3	+ 2,2	+ 7,8
2635	2030	1600	1245	0,12	0,26	0,41	— 0,3	+ 2,2	+ 7,8
2450	1910	1490	1165	0,12	0,26	0,42	— 0,3	+ 2,2	+ 7,8
2770	2100	1560	1100	0,10	0,20	0,34	— 0,3	+ 1,3	+ 4,7
2605	1975	1460	1030	0,10	0,21	0,35	— 0,3	+ 1,3	+ 4,7
2620	2170	1790	1470	0,12	0,25	0,40	— 0,2	+ 2,4	+ 6,5
2715	2155	1680	1315	0,11	0,23	0,37	— 0,3	+ 1,8	+ 5,5
2620	2105	1680	1345	0,13	0,26	0,41	— 0,2	+ 2,4	+ 7,0
3035	2520	2075	1705	0,12	0,24	0,37	— 0,2	+ 2,0	+ 6,2
2970	2350	1830	1420	0,11	0,22	0,36	— 0,6	+ 1,4	+ 5,0
2925	2320	1875	1495	0,12	0,24	0,39	— 0,4	+ 2,0	+ 6,3

Symbol	Cartridge	Bullet		Max. permiss-ible breech pressure lbs./ sq.in.	Barrel-length	Velocity ft. per sec.			
		Type	Weight grs.		inches	Muzzle	100 yds.	200 yds.	300 yds.
30	**8x56 M.Sch.**	S.P.	202	39 840	19,5	2170	1890	1660	1470
118	**8x57 J**	HMB	196	46 960	23,5	2480	2210	1980	1790
119 R	**8x57 JR**	HMB	196	39 840	23,5	2430	2180	1950	1755
34/ 34 R	**8x57 J 8x57 JR**	S.P.	196	46 960 39 840	23,5	2315	2000	1740	1525
34/ 34 R	**8x57 J 8x57 JR**	F.M.C.	196	46 960 39 840	23,5	2315	2000	1740	1525
151	**8x57 JS***	HMK	187	48 380	23,5	2690	2450	2245	2055
152 R	**8x57 JRS***	HMK	187	41 270	23,5	2520	2300	2115	1945
151	**8x57 JS***	HMB	187	48 380	23,5	2690	2360	2090	1850
152 R	**8x57 JRS***	HMB	187	41 270	23,5	2510	2220	1950	1740
153	**8x57 JS***	S.P.	196	48 380	23,5	2630	2240	1940	1700
153	**8x57 JS***	F.M.C.	196	48 380	23,5	2630	2240	1940	1700
154 R	**8x57 JRS***	S.P.	196	41 270	23,5	2400	2070	1800	1570
154 R	**8x57 JRS***	F.M.C.	196	41 270	23,5	2400	2070	1800	1570
203 203 R	**8x57 JS*† 8x57 JRS*†**	S.P.	196	48 380 41 270	23,5	2110	1780	1550	1360
39 R	**8x57 R/360**	S.P.	196	31 310	23,5	1750	1550	1350	1210
122	**8x60 S***	HMK	187	49 810	23,5	2770	2525	2295	2065
148	**8x68 S***	HMK	187	54 070	25,5	3180	2885	2625	2360
211	**8x68 S***	F.M.C.	196	54 070	25,5	3050	2640	2295	1985
288	**8x68 S***	KS	224	54 070	25,5	2855	2590	2345	2135
123	**9,3x62**	HMK	258	48 380	23,5	2560	2315	2100	1885
61	**9,3x62**	S.P.	286	48 380	23,5	2280	2000	1770	1575
61	**9,3x62**	F.M.C.	286	48 380	23,5	2280	2000	1770	1575
66 R	**9,3x72 R**	F.P.	193	25 610	23,5	1970	1560	1280	1085
124 R	**9,3x74 R**	HMK	258	42 690	23,5	2460	2245	2035	1835
71 R	**9,3x74 R**	S.P.	286	42 690	23,5	2265	1985	1755	1575
272 R	**9,3x74 R**	F.M.C.	286	42 690	23,5	2265	1985	1755	1575
84	**10,75x68**	S.P.	348	41 270	23,5	2230	1870	1610	1425
84	**10,75x68**	F.M.C.	348	41 270	23,5	2230	1870	1610	1425

* ATTENTION: Only for barrels with the larger S caliber bores 7.89/8.20 mm (.310/.323 in.)
† Reduced load for small deer. Identification: White lacquer seal of the primer.

Energy ft. lbs.				Time of flight sec.			Mid-Range Trajectory with telescopic sights 2″ above line of bore		
Muzzle	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.	100 yds.	200 yds.	300 yds.
2110	1600	1235	970	0,15	0,32	0,51	0	+ 3,8	+12,1
2675	2125	1705	1395	0,13	0,27	0,43	— 0,2	+ 2,4	+ 8,2
2570	2070	1655	1340	0,13	0,27	0,43	— 0,2	+ 2,4	+ 8,2
2330	1740	1315	1010	0,14	0,29	0,48	— 0,1	+ 3,2	+10,3
2330	1740	1315	1010	0,14	0,29	0,48	— 0,1	+ 3,2	+10,3
3005	2495	2095	1735	0,12	0,25	0,39	— 0,3	+ 1,9	+ 6,1
2635	2195	1860	1570	0,13	0,26	0,41	— 0,3	+ 2,2	+ 7,2
3005	2315	1810	1420	0,12	0,25	0,40	— 0,3	+ 2,2	+ 7,2
2615	2045	1580	1255	0,13	0,27	0,43	— 0,3	+ 2,6	+ 8,3
3010	2185	1635	1255	0,12	0,27	0,43	— 0,2	+ 2,4	+ 8,3
3010	2185	1635	1255	0,13	0,27	0,43	— 0,2	+ 2,4	+ 8,3
2505	1865	1410	1070	0,14	0,29	0,47	— 0,1	+ 3,1	+ 9,8
2505	1865	1410	1070	0,14	0,29	0,47	— 0,1	+ 3,1	+ 9,8
1940	1380	1045	805	0,16	0,34	0,54	— 0,1	+ 4,6	+13,3
1335	1045	790	635	0,18	0,39	0,64	+ 0,5	+ 6,2	+19,1
3185	2650	2185	1770	0,11	0,23	0,36	— 0,4	+ 1,7	+ 5,7
4200	3460	2860	2315	0,10	0,20	0,32	— 0,4	+ 1,1	+ 4,2
4050	3035	2290	1715	0,10	0,22	0,36	— 0,5	+ 1,4	+ 4,9
4055	3335	2735	2265	0,11	0,23	0,36	— 0,6	+ 1,4	+ 5,6
3755	3070	2525	2035	0,12	0,26	0,40	— 0,2	+ 2,4	+ 6,5
3300	2540	1990	1575	0,14	0,30	0,48	— 0,1	+ 3,0	+ 9,9
3300	2540	1990	1575	0,14	0,30	0,48	— 0,1	+ 3,0	+ 9,9
1660	1040	700	505	0,16	0,38	0,64	+ 0,4	+ 5,9	+18,4
3470	2885	2375	1925	0,13	0,26	0,42	— 0,2	+ 2,6	+ 7,2
3260	2505	1955	1575	0,14	0,31	0,49	0	+ 3,1	+10,3
3260	2505	1955	1575	0,14	0,31	0,49	0	+ 3,1	+10,3
3840	2700	2000	1570	0,15	0,32	0,52	— 0,2	+ 3,9	+12,2
3840	2700	2000	1570	0,15	0,32	0,52	— 0,2	+ 3,9	+12,2

Ballistic Data of GECO-Revolver- and Pistol Cartridges

Cartridge gauge	Weight of		max. permissible breech-pressure lbs./sq. in.	Barrel-length	Velocity ft. per sec.			Energy		
	Powder grs.	Bullet grs.		inches	Muzzle	V_{15}	V_{30}	Muzzle	15 yds.	30 yds.
6,35 mm	1,28	50,15	15 000	2,4	740	715	690	69,7	57,2	53,1
7,65 mm	2,62	73,30	23 500	3,9	1005	980	965	164,2	156,1	151,0
9 mm short	3,09	92,59	17 100	3,5	870	845	825	155,6	146,3	139,8
9 mm para	5,32	123,46	34 100	4,9	1155	1130	1090	365,4	349,4	324,7
.38 Special	3,86	158	12 091	5,9	866	853	826	266	258	242
.38 Special WAD CUTTER	2,47	148	11 379	5,9	738	722	700	179	170	159

BALLISTIC DATA

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